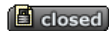


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12-13-2003, 04:22 AM Thread Tools ▼ Search this Thread ▼ Rate Thread ▼ Display Modes ▼ #1	
wolfman Super Member Join Date: Jun 2002 Location: Texas Posts: 12,066 wolfman's Photos	S-Series Engine Removal Manual Transaxle ENGINE AND TRANSAXLE ASSEMBLY REMOVAL Saturn "S" series 91'-02' MANUAL TRANSAXLE EQUIPED CAR ONLY! You will be removing the engine AND transaxle TOGETHER. WARNING!!!! I AM NOT A TECHNICAL WRITER! THESE INSTRUCTIONS ARE AS CLEAR AND COMPLETE AS I CAN REMEMBER. I WILL NOT HOWEVER BE HELD RESPONSIBLE FOR ANY STEPS OR PROCEDURES THAT I MAY HAVE INADVERTANTLY LEFT OUT! EXCERSIZE EXTREME CARE AND CAUTION AS YOU PROCEED AND STOP IF IN DOUBT AND ASK FOR HELP BEFORE YOU DAMAGE OR BREAK ANYTHING!!! I HIGHLY RECOMMEND YOU PURCHASE A HAYNES OR CHILTON MANUAL FOR YOUR CAR PRIOR TO STARTING THIS FOR MORE DETAILED INSTRUCTIONS ON HOW TO DEAL WITH THE DRIVE AXLES AND FRONT SUSPENSION COMPONANTS AS WELL AS VALUABLE ILLUSTRATIONS!! CAUTION! This is NOT for the inexperienced or faint of heart. You WILL NEED a COMPLETE SET of METRIC WRENCHES AND SOCKETS, PRY BARS, A 3 JAW PULLER AND AN ENGINE HOIST WITH A SLIDER OR "SLANT BAR", FLOOR JACK AND JACKSTANDS MINIMUM to accomplish this! 1. REMOVE the HOOD. (MARK where the hinges are with a magic marker to make it easier to get back on straight FIRST) Disconnect and remove the battery, air snorkel and air cleaner assemblies from the car (disconnect wiring connector for the IAT sensor first) LOOSEN but do not remove the 30mm drive axle to axle shaft nuts with both wheels still installed and on the ground. Remove the coolant reservoir and washer fluid reservoir. 2. From below, disconnect the battery cable and actuation wires to the starter and the wires connected to the alternator (leave BOTH the starter and alternator ON the engine) MAKE SURE any wiring harnesses are disconnected from the keepers that attach them to the engine. Disconnect the wiring connections for the knock sensor, oil sending unit, CCPS and CPS. Unbolt the exhaust down pipe from the exhaust manifold flange 3. Drain the engine oil, transaxle fluid and coolant and REMOVE the upper and lower radiator hoses. REMOVE the radiator and fan assembly. Disconnect the fuel lines from the fuel rail (or throttle body in TBI cars) and position them out of the way. Disconnect the throttle cable and do the same. Disconnect the vacuum hose from the brake booster 4. Disconnect the wiring harness connector at the DIS module and position it out of the way. Disconnect and LABEL the wires for the IAC, TPS, ECTS, (and gauge sensor on 91'-95' cars) MAP, EGR valve (vacuum lines as well if a 91-94 car) Disconnect the wire(s) going to the fuel injector(s) and position them out of the way. Disconnect the battery ground wires from the two attaching points on the upper bell housing 5. Unbolt the power steering pump from the engine, drain the pump by disconnecting the lines from the pump and letting the fluid run into a 1 quart or so container underneath the hose connections (a margarine tub works well), remove the Power steering pump. (I find this easier than risking damage to the pump by just moving it out of the way) If the car has A/C, unbolt the compressor from it's bracket LEAVING THE HOSES ATTACHED AND ALONE and position it out of the way where the radiator used to be. Remove the heater hoses from their connections at the FIREWALL. 6. Remove the serpentine drive belt (already done when you took the PS pump off I hope) REMOVE the Crankshaft pulley, water pump pulley and idler pulley (gains you needed extra clearance) 7. Remove the retaining clips and then the shifter cables from the shifter cable ends to transaxle shifter arms at the shift tower and the retaining eyelets, position the cables out of the way toward the firewall. Unplug the wiring connections for the reverse lights and VSS sensor at the transaxle. 8. Make SURE the master cylinder reservoir is FULL to within ¼ of an inch of the top and then remove the SLAVE cylinder from the bell housing. MAKE SURE THERE IS NO WAY THE CLUTCH PEDAL WILL BE DEPRESSED WITH THE SLAVE REMOVED!! Position it out of the way, but DO NOT DISCONNECT THE HOSE OR POSITION IT HIGHER THAN THE MASTER CYLINDER FOR THE CLUTCH! 9. Jack up BOTH sides of the car high enough to remove the wheels and support it with JACKSTANDS. Remove both front wheels 10. DO THIS ON BOTH SIDES: Remove the tie rod end to knuckle nuts and separate the tie rods from the knuckle. Remove the brake caliper guide and lock pins and pull the calipers off the rotors, hang them out of the way with a wire coat hanger. Remove the inner splash shields. Remove the ball joint to knuckle nuts and separate the ball joint from the knuckle. Remove the 30mm nut from the end of the drive axle and separate the axle from the hub. Remove the three upper strut attaching nuts and remove the strut, knuckle and rotor AS AN ASSEMBLY 11. Remove the drive axles. DO NOT "YANK" on them to separate them from the transaxle/intermediate shaft! PRY out the driver's side with a large pry bar between the INNER axle and transaxle differential case, and then use a block of wood to tap out the passenger side axle from the intermediate shaft. 12. Remove the intermediate shaft to engine block attaching bolts and remove the intermediate shaft. 13. Support the engine from ABOVE with your hoist and a chain hooked to the two lifting eyes on the engine 14. Remove the upper torque axis mount and mount to space frame bracket. (Remove "shock absorber type" front mount completely on a 91' SOHC) Remove the lower engine dog bone mount (or lower mount nut on a 91' SOHC) 15. Remove the upper and lower transaxle dog bone mounts and transaxle to space frame "pad" mounting nut from below. (On 91' SOHC the mounts are different! The bell housing end mount can be unbolted from the transaxle and just

swung down out of the way)

16. MAKE SURE there is now NOTHING connected to the engine or transaxle (wires, hoses etc) Then MAKE SURE AGAIN FROM BOTH ABOVE AND BELOW THE ENGINE BAY!!! There should be uninterrupted EMPTY SPACE all around the engine and transaxle on EVERY SIDE at this point EXCEPT where the engine and transaxle fit together. Any wires or hoses you see that I may have missed need to come off NOW.

17. Position your slider so that it will lift the PASSENGER SIDE of the engine at a SLIGHT ANGLE to the drivers side, then LIFT the engine and transaxle assembly SLIGHTLY while observing all the points where the engine AND transaxle attach to the space frame. Lift the engine and transaxle assembly about 2 inches making SURE you have not forgotten any mounting bolts or other items, it should now be completely clear of the space frame.

18. Remove the lower transaxle driver's side to space frame "pad" mounts from the now suspended transaxle end. (You'll need this clearance for the lift angle involved in the next steps)

19. Using your slider bar on the hoist, angle your lift so that the driver's side of the engine ONLY slowly rises out out the engine compartment while the transaxle stays relatively where it is until the crankshaft end clears the upper space frame rail on the PASSENGER SIDE. The whole mess will be at nearly a 45 degree or more angle when this happens with the ENGINE (passenger side) being the "high" end.

20. Once the crankshaft end clears as described, continue lifting the ENTIRE assembly at this angle until the bottom of the engine clears the engine bay. You can NOW either level out the lifted assembly and wheel it away from the car, or continue lifting at this angle until the whole mess clears and then wheel it away from the car on the hoist.

The starter and alternator can be removed much easier now and transferred to any donor engine you might be installing. The engine and transaxle can now also be easily separated on the ground.

INSTALL IS REVERSE (LOL)

KEYS TO SUCCESS.

LABEL all wires and hoses you disconnect with masking tape and magic marker labels to make reinstall easier.

TAKE YOUR TIME! I CANNOT STRESS THIS ENOUGH!

AGAIN NOTE THIS PROCEEDURE WILL WORK FOR A MANUAL TRANSAXLE EQUIPED CAR ONLY!! YOU CANNOT REMOVE AN AUTOMATIC TRANSAXLE EQUIPED CAR'S ENGINE USING THESE INSTRUCTIONS!!

...

Old Saturns never die, people KILL them, so check your damn oil!

"Unthinking respect for authority is the greatest enemy of truth." Albert Einstein

REWARD EXCELLENCE!



Rate the quality of this post and help *wolfman* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!



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12-13-2003, 09:46 AM

#2

geartooth94

Master Member



Join Date: Mar 2003
Location: Allentown, PA
Posts: 3,879

[geartooth94's Photos](#)



I believe something important to note is the shop time for this procedure is anywhere from 8-10 hours total. I believe that is what I have read here elsewhere on the board.

...

1996 Dodge Avenger ES: 2.5L V6

REWARD EXCELLENCE!



Rate the quality of this post and help *geartooth94* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

12-15-2003, 03:00 AM

#3

wolfman

Super Member



Join Date: Jun 2002
Location: Texas
Posts: 12,066

[wolfman's Photos](#)



As an addendum after recieving a few email questions/commnets. NO, it is not 100% necessary to actually remove the power steering pump from the car. BUT, you MUST unbolt it from it's mount on the engine and TIE it as far as possible away from the engine, preferably near the firewall to upper space frame corner. The idler pulley can also be left on if desired. My instructions recommend removing these things along with the radiator to absolutely minimize the chance of any "collateral damage" when pulling the engine.

...

Old Saturns never die, people KILL them, so check your damn oil!

"Unthinking respect for authority is the greatest enemy of truth." Albert Einstein

REWARD EXCELLENCE!



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Razorbak
Master Member



Join Date: Aug 2004
Location: Chicagoland
Posts: 2,860

[Razorbak's Photos](#) 

1996 SL2



#4

08-26-2004, 10:19 PM

FYI, I'm about to undertake this procedure tomorrow. I am also armed with the Haynes and Chilton manuals, as well as the procedures from my AllDataDIY.com subscription. Wish me luck. 😊

REWARD EXCELLENCE!

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tristanlee85
Member

Join Date: Jan 2004
Posts: 97

[tristanlee85's Photos](#) 



#5

09-01-2004, 07:18 AM

Tell me how it goes. I'll be doing it Friday or Saturday.

REWARD EXCELLENCE!

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Razorbak
Master Member



Join Date: Aug 2004
Location: Chicagoland
Posts: 2,860

[Razorbak's Photos](#) 

1996 SL2



#6

09-02-2004, 09:22 AM

Quote:

Originally posted by tristanlee85
Tell me how it goes. I'll be doing it Friday or Saturday.

All the gory details are contained in [this thread](#).

REWARD EXCELLENCE!

 Rate the quality of this post and help *Razorbak* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

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